

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/009662

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>Int.Cl <sup>7</sup> F03D9/00, F03D1/04, F03D3/04, H02K21/12  |  |  |                     |           |                            |           |                           |           |                            |           |
|--|--|--|---------------------|-----------|----------------------------|-----------|---------------------------|-----------|----------------------------|-----------|
| According to International Patent Classification (IPC) or to both national classification and IPC  |  |  |                     |           |                            |           |                           |           |                            |           |
| <b>B. FIELDS SEARCHED</b><br>Minimum documentation searched (classification system followed by classification symbols)<br>Int.Cl <sup>7</sup> F03D1/00-11/04, H02K21/12  |  |  |                     |           |                            |           |                           |           |                            |           |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched<br><table border="0"> <tr> <td>Jitsuyo Shinan Koho</td> <td>1922-1996</td> <td>Toroku Jitsuyo Shinan Koho</td> <td>1994-2004</td> </tr> <tr> <td>Kokai Jitsuyo Shinan Koho</td> <td>1971-2004</td> <td>Jitsuyo Shinan Toroku Koho</td> <td>1996-2004</td> </tr> </table>   |  |  | Jitsuyo Shinan Koho | 1922-1996 | Toroku Jitsuyo Shinan Koho | 1994-2004 | Kokai Jitsuyo Shinan Koho | 1971-2004 | Jitsuyo Shinan Toroku Koho | 1996-2004 |
| Jitsuyo Shinan Koho  | 1922-1996  | Toroku Jitsuyo Shinan Koho   | 1994-2004           |           |                            |           |                           |           |                            |           |
| Kokai Jitsuyo Shinan Koho  | 1971-2004  | Jitsuyo Shinan Toroku Koho   | 1996-2004           |           |                            |           |                           |           |                            |           |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)   |  |  |                     |           |                            |           |                           |           |                            |           |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>  |  |  |                     |           |                            |           |                           |           |                            |           |
| Category*  | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.  |                     |           |                            |           |                           |           |                            |           |
| X<br>Y<br><br>A  | JP 2002-310057 A (Masako OMOTO),<br>23 October, 2002 (23.10.02),<br>Full text; Figs. 12 to 14<br>& WO 2002/025108 A1   | 1, 2, 5, 22<br>3, 4, 6-12,<br>14-16, 23-25,<br>39<br>26-28                         |                     |           |                            |           |                           |           |                            |           |
| X<br>Y<br><br>A  | JP 2001-331098 A (Asahi Sangyo Kabushiki Kaisha),<br>30 November, 2001 (30.11.01),<br>Full text; Fig. 1<br>(Family: none)  | 1, 2, 5, 22<br>3, 4, 6-12,<br>14-16, 23-25,<br>39<br>26-28                         |                     |           |                            |           |                           |           |                            |           |
| X<br>Y   | JP 5-500995 A (Holec Projects B.V.),<br>25 February, 1993 (25.02.93),<br>Full text; Figs. 3a, 3b<br>& WO 1991/005953 A1 & US 5315159 A<br>& EP 0495872 A1 & NL 8902534 A | 1, 2, 5, 16<br>3, 4, 6-12, 14,<br>15, 23-25, 39                                    |                     |           |                            |           |                           |           |                            |           |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.   |  |  |                     |           |                            |           |                           |           |                            |           |
| * Special categories of cited documents:<br>"A" document defining the general state of the art which is not considered to be of particular relevance<br>"E" earlier application or patent but published on or after the international filing date<br>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"P" document published prior to the international filing date but later than the priority date claimed<br>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention<br>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone<br>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art<br>"&" document member of the same patent family |  |  |                     |           |                            |           |                           |           |                            |           |
| Date of the actual completion of the international search<br>14 October, 2004 (14.10.04)   |  | Date of mailing of the international search report<br>02 November, 2004 (02.11.04) |                     |           |                            |           |                           |           |                            |           |
| Name and mailing address of the ISA/<br>Japanese Patent Office   |  | Authorized officer   |                     |           |                            |           |                           |           |                            |           |
| Facsimile No.  |  | Telephone No.  |                     |           |                            |           |                           |           |                            |           |

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| Y         | JP 10-336954 A (Mitsuhiro FUKADA),<br>18 December, 1998 (18.12.98),<br>Par. Nos. [0019] to [0026]; Fig. 3<br>& WO 1998/054463 A1 & US 6147415 A   | 1-5                   |
| Y         | JP 2002-320364 A (Kochi University of<br>Technology),<br>31 October, 2002 (31.10.02),<br>Par. Nos. [0010] to [0023]; Fig. 1<br>(Family: none)   | 1-5                   |
| Y         | JP 2002-339854 A (Toshiyuki UCHIBAYASHI),<br>27 November, 2002 (27.11.02),<br>Par. Nos. [0022] to [0025]; Figs. 11, 13<br>(Family: none)  | 6, 7, 39              |
| Y         | JP 2001-99046 A (Minoru SUGIYAMA),<br>10 April, 2001 (10.04.01),<br>Full text; Fig. 1<br>(Family: none)   | 6, 8, 9, 23-25        |
| Y         | JP 9-189283 A (Noriaki MATSUO),<br>22 July, 1997 (22.07.97),<br>Full text; Fig. 3<br>(Family: none)   | 6, 8, 9, 23-25        |
| Y         | JP 2003-148323 A (Tokai University),<br>21 May, 2003 (21.05.03),<br>Par. Nos. [0014] to [0015]; Fig. 2<br>(Family: none)  | 6, 8, 9, 23-25        |
| Y<br>A    | JP 11-299202 A (Matsushita Seiko Co., Ltd.),<br>29 October, 1999 (29.10.99),<br>Par. Nos. [0037] to [0040]; Figs. 9 to 10<br>(Family: none)   | 10<br>26, 27          |
| Y         | JP 8-322298 A (Yamaha Motor Co., Ltd.),<br>03 December, 1996 (03.12.96),<br>Full text<br>(Family: none)   | 11                    |
| X<br>Y    | Microfilm of the specification and drawings<br>annexed to the request of Japanese Utility<br>Model Application No. 105559/1986 (Laid-open<br>No. 12666/1988)<br>(Risaburo TSUCHIYA),<br>27 January, 1988 (27.01.88),<br>Full text; Fig. 1<br>(Family: none) | 13<br>12, 14, 15, 39  |
| X         | JP 8-205500 A (Yoichi INABA),<br>09 August, 1996 (09.08.96),<br>Par. No. [0004]; Figs. 1 to 3<br>(Family: none)   | 17-20, 40, 41         |

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| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |  |                           |
|---|--|---------------------------|
| Category*   | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.     |
| X   | CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 30700/1992 (Laid-open No. 82781/1993)<br>(Hideho WADA),<br>09 November, 1993 (09.11.93),<br>Par. Nos. [0007] to [0008]; Figs. 1 to 4<br>(Family: none) | 17-20, 40, 41             |
| A   | JP 2003-134891 A (Mitsubishi Heavy Industries, Ltd.),<br>09 May, 2003 (09.05.03),<br>Full text<br>(Family: none)   | 21                        |
| A   | JP 2000-60096 A (Sawafuji Electric Co., Ltd.),<br>25 February, 2000 (25.02.00),<br>Full text<br>(Family: none)   | 21                        |
| X<br>Y<br>A   | JP 55-164783 A (Masafumi ISHIMURA),<br>22 December, 1980 (22.12.80),<br>Full text; Fig. 1<br>(Family: none)  | 29-34, 36<br>37, 38<br>35 |
| X<br>Y<br>A   | JP 6-88565 A (Shigeo NAKAGAWA),<br>29 March, 1994 (29.03.94),<br>Full text: Figs. 1 to 5<br>(Family: none)   | 29-34, 36<br>37, 38<br>35 |
| X<br>Y<br>A   | JP 2002-364518 A (Makoto YANAGIDA),<br>18 December, 2002 (18.12.02),<br>Full text; Fig. 2<br>(Family: none)  | 29-34, 36<br>37, 38<br>35 |
| Y   | JP 8-128383 A (Ryoda SATO),<br>21 May, 1996 (21.05.96),<br>Full text; Figs. 3, 5<br>(Family: none)   | 37, 38                    |

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## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The general inventive concept of the inventions of claims 1-12, 14-16, 26-28, and 39 is that, in a wind power generation system, magnets for a magnetic field system are arranged, equidistant from the rotation center of a blade wheel, on either a blade wheel or a frame and coils are annularly arranged on the other.

(continued to extra sheet)

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

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## Continuation of Box No.III of continuation of first sheet (2)

The general inventive concept of the invention of claim 13 is that, in a wind power generating system, a circularly annular guide having the center as the rotation center that is provided on either a frame or a blade wheel is provided and a slider traveling along its guide is disposed on the other.

The general inventive concept of the inventions of claims 17-18, and 40-41 is an electricity/force conversion apparatus where magnet portions constituted of pairs of N poles and S poles are provided on both faces of moving elements such that an N pole and an S pole, and an S pole and an N pole are alternately positioned.

The general inventive concept of the invention of claim 19 is an installation structure of permanent magnets, in which structure one face of each permanent magnet is arranged so as to face the same pole face side and a short magnetic body having a smaller thickness than each permanent magnet is placed between adjacent permanent magnets.

The general inventive concept of the inventions of claim 20-21 is an electricity/force conversion apparatus that has stators on both sides of magnetic poles of a moving element, and where stator coils of the same phase wound on the stators on both sides are made to cross each other.

The general inventive concept of the invention of claim 22 is a wind power generation system having blades, an annular support member for holding the blades that are annularly arranged, a guide member provided so as to be opposed to the support member and supporting the support member, a magnet for a magnetic field system, provided on either the support member or the guide member, and a coil provided on the other and producing electricity by moving relative to the magnet for a magnetic field system.

The general inventive concept of the inventions of claim 23-25 is an electricity/force conversion apparatus having moving elements, stators arranged on both sides of the moving elements, movement-side repelling magnets disposed so as to move with the moving elements, and stationary-side repelling magnets repelling the movement-side repelling magnets, wherein either the movement-side repelling magnets or the stationary-side repelling magnets are arranged so as to sandwich the other to urge the moving elements to a neutral position.

The general inventive concept of the inventions of claim 29-36 is a power generation apparatus using a blade wheel which apparatus has a vertical airflow path whose upper portion and lower portion communicate with the external air, a blade wheel rotated by an upward airflow provided in the airflow path, and a generator operating in conjunction with a rotating portion of the blade wheel.

The general inventive concept of the inventions of claim 37-38 is a heat conversion system having a first heat converter provided near the ground, a second heat converter provided at a position having a different temperature from that of a position near the ground, piping connecting in a loop-like form the first heat converter and the second heat converter, and means for providing a heat medium that flows in the

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pipng with a circulation flow.

As described above, individual groups of the inventions are not so linked as to form a single general inventive concept; therefore this application does not satisfy the requirement of unity of invention.